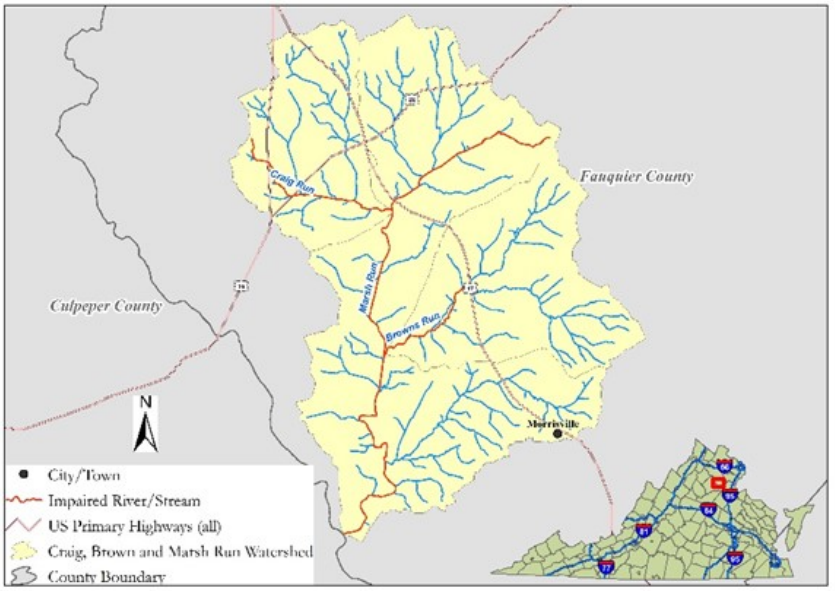
TMDL Project Closeout Report
CRAIG RUN, BROWNS RUN, MARSH RUN WATERSHED

Virginia Nonpoint Source
MANAGEMENT PROGRAM

Project Location and Background

The Craig Run, Browns Run, and Marsh Run watersheds are located in Fauquier County, VA in the Rappahannock River Basin. The watersheds comprise approximately 29,400 acres, with agriculture and forest as the predominant land uses. Marsh Run, Browns Run, and Craig Run were initially placed on Virginia's *Section 303(d) Total Maximum Daily Load Priority List and Report* in 1996, 2002, and 2004, respectively for exceeding the state's water quality standard for bacteria. Bacteria TMDLs were completed for the creeks in April 2007 as part of the Rappahannock River Basin TMDL. A TMDL implementation plan was completed in November 2010; the implementation project began in January 2012 and ended in June 2017.



Implementation Highlights

The John Marshall Soil and Water Conservation District (JMSWCD) administered the Craig, Browns and March Runs TMDL Implementation Project. The table on the right shows BMPs implemented in the watersheds since the project began in January 2012 and the implementation goals established for the project area. Of note, 16 livestock exclusion with grazing land management projects were completed, resulting in approximately 12 miles of stream exclusion fencing in watersheds. In addition, 558 acres of pasture management, 110 acres of harvestable cover crop and 337 acres of small grain and mixed cover crop for nutrient management and residue management were installed. Also, a 3,900 linear feet of stream exclusion maintenance work was completed in the watersheds. Under residential projects, 19 septic tank pump outs, two septic system repairs, three septic system replacements/installations and four alternative waste treatment systems were completed.

(continued on page 2)

Table 1: Craig, Browns, and Marsh Runs BMP Summary:

Control measure	Units	Goal	Installed	%
Agricultural				
Stream Exclusion Fencing	F	343,200	64,560	19
	S	93	16	17
Improved Pasture Mgmt.	Ac	14,544	558	4
Reforestation of Pasture or	Ac	80	0	0
Permanent Vegetative Cover	Ac	80	58	73
Residential				
Septic Tank Pump-out	S	40	19	48
Connection to Public Sewer	S	5	0	0
Septic System Repairs	S	266	2	<1
Septic System Replacements	S	138	3	2
Alternative Waste Treatment	S	44	4	9
Pet Waste				
Pet waste education program	P	1	1	100

A = Acres, S = System, F = Feet, P=Program; NOTE: BMP counts only include 319-funded project and BMPs funded by the VA Agricultural Cost Share Program.

Implementation Highlights— Continued

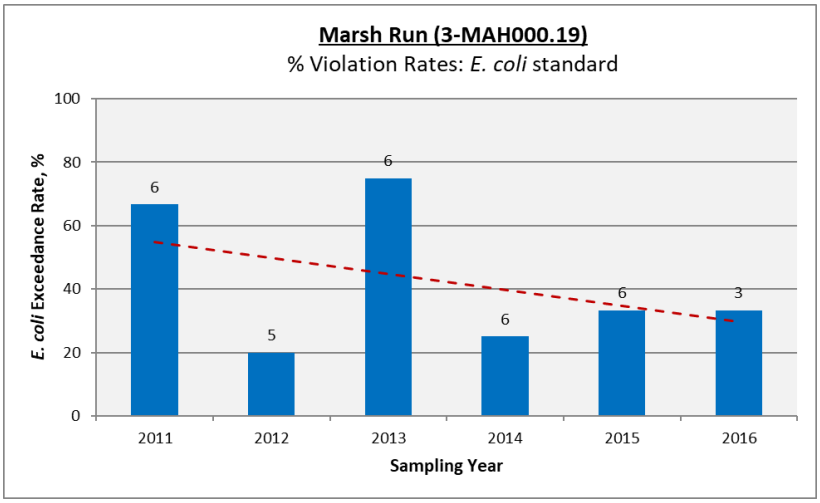
In addition, one pet waste education program was conducted to increase public awareness on pet waste disposal and treatment. Throughout implementation, JMSWCD worked on water quality education and outreach strategies including working with homeowner associations, community-based organizations, and local businesses to increase awareness of local water quality issues and the availability of the cost-share assistance. Pollution reductions resulting from BMP implementation are summarized in Table 2 below

Period	Pathogens (Coliform) (CFU)	Nitrogen (lbs/year)	Phosphorus (lbs/year)	Sedimentation (tons/year)
July 2012-June 2017	5.27E+15	19,241	2,473	1,892

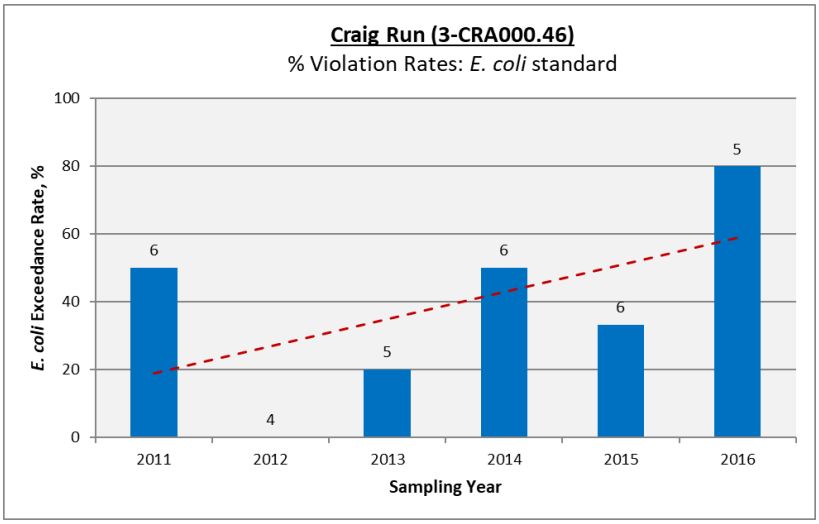
Table 2: Pollution Reductions for Craig, Browns, and Marsh Runs Watershed

Water Quality Monitoring Results

Water quality data collected by DEQ for the period of 2011 through 2016 were analyzed to determine the impact of BMPs implemented in the project area on *E. coli* violation rates and associated long term trends, if any, in water quality. The bar graph to the right shows the percent violation rate for samples collected annually at monitoring station 3-MAH000.19, located near the mouth of Marsh Run, that did not meet the water quality standard of 235 cfu/100 mL. The number of samples collected each year is shown above each bar. The linear regression fitted to the data shows a decreasing trend in violation rates over the sampling period, indicating possible improvement in water quality in Marsh Run. But, water quality data collected at Craig Run (station 3-CRA000.46) in same sampling period shows an increasing trend in violation rates, indicating possible deterioration in water quality.



Graph 1: *E.coli* data for Marsh Run (Station 3-MAH000.19), 2011-2017



Graph 2: *E.coli* data for Marsh Run (Station 3-MAH000.19), 2011-2017

Partnerships

Agricultural and residential projects in the watersheds were implemented through partnerships between JMSWCD, Virginia Cooperative Extensive Services and other federal, state and local officials. A total of 72 separate outreach activities and educational programs were conducted during the grant period. Outreach focused on press releases to local publications, direct mailings to homeowners, and presentations to local civic organizations. JMSWCD staff also worked with Liberty High School and Cedar Lee Middle School to promote water quality monitoring and stewardship projects. A series of pasture management programs were sponsored in cooperation with Virginia Cooperative Extension. In total, 20 educational programs were held in the Marsh Run watershed (approximately 1630 attendees). In addition, eight different print and web-based articles and four direct mailings promoting the TMDL program were published through outlets with a combined circulation of 52,500 people. Also, staff made presentations to six community organizations and participated in exhibits at five public events, reaching a combined 670 people.

Photos: (Left) alternative watering system; (Right) livestock exclusion fencing. Courtesy of JMSWCD.

The Virginia Nonpoint Source Management Program: The Virginia NPS Management Program is managed by the Virginia Department of Environmental Quality (DEQ) and is funded, in part, through grants from the U.S. Environmental Protection Agency, under the Clean Water Act Section 319(h). For more information regarding Virginia's Nonpoint Source Management Program, please visit us on the web at: http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/NonpointSourcePollutionManagement.aspx . An electronic copy of this report can be found here: http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/TMDL/TMDLImplementation/TMDLImplementationProjects.aspx General NPS Program questions? email: npsgrants@deq.virginia.gov

Closeout Analysis

The Brown, Craig, and Marsh Runs Implementation Project continued for five-and-half years, from January 2012 until June 2017 and was mildly successful in meeting implementation goals. Highlights of the project include the following:

⇒ As shown in Table 1, stream exclusion fencing (linear feet) and the number of system installed met 19% and 17% of the IP goal, respectively. The permanent vegetative cover on cropland achieved 73% of goal. Under the residential program, 48% of septic tank pump-outs, less than 1% of septic system repairs, 2% of septic system installation/ replacement, and 9% of alternative waste treatment system goals were met. In addition, pet waste education program met 100% of IP goal.

⇒ A partnership developed among state, federal and local agencies and stakeholders contributed to the implementation of various agricultural, residential and pet waste projects.

⇒ A farm owner was honored with the 2014 Grand Basin Award for a BMPs implemented as part of this project.

⇒ Despite significant program promotion and two paid advertisements, inquiries and sign-up were relatively low. Both advertisements yielded less than five calls each, more than half of which were from residents located just outside the watershed.

⇒ The main reasons for low participation, staff believed were: the Marsh Run watershed is a small compared to others; a significant portion of the population of southern Fauquier County is wary of getting involved in government programs or fearful of having to do a more extensive practice than they planned. In addition, many residents are elderly and/or have limited resources and were unable to front the cost of various practices.

For More Information Please Contact:

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